REMARKS

Claims 1, 3-5, 7-15, 18, 19, 21-22 and 25-29 are pending. By this amendment, claims 1, 10, 12, 18, 21 and 22 are amended, claims 23 and 24 are canceled, and claims 25-29 are added.

Objections

In amended Figure 5, the previously omitted labeling character has been added, and the text in the boxes of Figure 5 has been amended as to not overlap with the box boundaries. Withdrawal of the objection of Figure 5 is respectfully requested.

Paper No. 19 objects to claims 1 and 12. Paper No. 19 stated that "the examiner believes the word --the-- should be inserted before "at" in lines 5 and 11 of claims 1 and 12, respectively. The Applicants respectfully disagree with the Examiner and note that claims 1 and 12 correctly recites the features recited in lines 5 and 11, respectively. Withdrawal of this objection is respectfully requested.

Paper No. 12 also objected to Applicants Rule 131 declaration. Specifically, Paper No. 12 stated that the Rule 131 declaration was not sufficient to show that the reduction to practice worked for its intended purpose. Accordingly, Applicants submit the attached additional declarations of Applicant Knebel and Rohit Bhatia, a colleague of Applicant Knebel, to show that the reduction to practice worked for its intended purpose. The declarations show that the Applicants tested the reduction to practice and the tests proved that the reduction to practice worked for its intended purposes. Consequently, the submitted Rule 131 declarations are sufficient to show reduction practice prior to the filing date of Col (May 18, 1999). Consequently, per 37 CFR § 1.131(b), Col is not effective prior art against the present application. Issuance of a Notice of Allowance for at least these reasons is respectfully requested.

Rejections

Claims 1, 3-5, 7-15, 18-19, 21-22, and 25-29 are rejected under 35 USC 102(f). Applicants traverse this rejection as the Examiner has not met the burden for a *prima facie* showing sufficient to support a rejection under 102(f). Paper No. 19 asserts that the Applicants did not invent the claimed subject matter. As alleged evidence supporting this rejection, the Examiner cites the RTL code listings submitted by Applicants to show *actual reduction to practice* of the claimed invention. That the RTL code does not list one of the inventors is not evidence that the inventor did not contribute to the reduction to practice. Moreover, even if, *arguendo*, the evidence of reduction to practice shows that persons

different than the named inventors reduced the invention to practice, this showing has no bearing on the identity of the inventors. "The threshold question in determining inventorship is who conceived the invention ... Insofar as defining an inventor is concerned, reduction to practice, *per se*, is irrelevant." MPEP 2137.01. Moreover, see *In re DeBaun*, 687 F.2d 459, 463, 214 USPQ 933, 936 (CCPA 1982) ("there is no requirement that the inventor be the one to reduce the invention to practice so long as the reduction to practice was done on his behalf"). By submitting the RTL code, the Applicants have merely asserted that the RTL code shows reduction to practice; Applicants have made no admission or statement regarding conception. Consequently, the RTL code listing does not show invention by another and does not implicate 35 U.S.C. § 102(f). Withdrawal of the rejection of claims 1, 3-5, 7-15, 18-19, 21-22, and 25-29 are respectfully requested.

Claims 1, 3, 4, 7, 8, 12-15, and 19 are rejected under 35 USC § 103 as obvious over the combination of Col, Nakajima, Shang and Song. Claim 5 is rejected in light of the combination of Col, Nakajima, Shang and Song, further in view of Hennessey and Patterson. Claims 10, 11, 21 and 22 are rejected in light of the combination of Col, Nakajima, Shang and Song, further in view of Intel. Claim 9 is rejected in light of the combination of Col, Nakajima, Shang and Song, further in view of Phillips. Claim 18 is rejected in light of the combination of Col, Nakajima, Shang and Song, further in view of Intel and Makineni. Claim 25 is rejected in light of the combination of Col, Nakajima, Shang, Song, and Blomgren. Applicants respectfully traverse these rejections.

"To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP 2143.03 (emphasis added). The combined references fail to teach or suggest all the claim limitations.

For example, the combination of Col, Nakajima, Shang and Song does not teach or suggest "determining whether at least two of the plurality of microinstructions are required to issue in parallel," recited in independent claims 1, 10, and 12. Paper No. 19 cites Nakajima as teaching "such a concept." Applicants respectfully note that claims 1, 10, and 12 do not recite a "concept," but, rather a specific step that the combined references must teach in order to render claims 1, 10, and 12 obvious. MPEP 2143.03. Nakajima does not teach the recited step.

Nowhere does Nakajima teach or suggest "determining whether at least two of the plurality of microinstructions are required to issue in parallel." Even if, *arguendo*, Nakajima teaches requiring instructions to issue in parallel, Nakajima does not teach or suggest the "determining" step. Nakajima simply does not describe, anywhere, making the recited

determination. If the Examiner disagrees and maintains this rejection, the Examiner is respectfully invited to cite to the specific description of such a determination. Otherwise, this rejection must be withdrawn and claims 1, 10, 12, and their dependent claims 3-5, 7-15, 18-19, 21, 22, and 25.

Moreover, Nakajima does not teach or suggest requiring instructions to issue in parallel. Paper No. 12 cites to FIGs. 12(a) and 12(b) of Nakajima as showing that two instructions held in instruction memory 60 are required to issue in parallel. It is noted that none of the description corresponding to FIGs. 12(a) and 12(b), col. 11, line 33 to col. 12, line 14, states or suggests that these two instructions are *required* to issue in parallel.

Furthermore, paper No. 12 states that the two instructions in FIGs. 12(a) and 12(b) are required to issue in parallel as opposed to the instructions in FIGs. 11a, 11b, 13a, and 13c where the instructions are "not required" to issue in parallel due to resource conflicts. However, an examination of the description corresponding to FIGs. 11a, 11b, 13a, and 13c shows that rather than "not requiring" the instructions to issue in parallel, Nakajima "prohibits" the instructions from issuing in parallel:

> FIG. 11(a) is the case where an instruction to *hinder* the advancement of the pipeline ... is stored in the first stage of the first operation controlling pipeline 80, and the advancement of the first operation controlling pipeline 90 is *prohibited* by a first pipeline locking signal

Col. 10, ll. 15-20 (Emphasis added). The opposite of prohibit is to allow. Accordingly, it follows that since Nakajima is *prohibiting* the instructions from issuing in parallel in FIGs. 11 and 13, Nakajima must be *allowing* the instructions to issue in parallel in FIGs. 12.

An examination of the description corresponding to FIGs. 12 indicates that this is clearly the case. Nakajima allows the instructions to issue in parallel in FIGs. 12, despite their output dependency, through the mechanism of the "Write After Write (WAW)" and "Write Priority (WP)" identifiers. If the WAW exists and the WP is high in a 2nd pipeline, thus indicating the 2nd pipeline instruction is dependent on the 1st pipeline instruction, Nakajima locks the 2nd pipeline until the 1st pipeline unlocks (i.e., 1st pipeline instruction is executed). See, col. 11, lines 45 to col. 12, line 21. This mechanism allows a parallel issue of the instructions. Therefore, Nakajima does not required parallel issue of two instructions, let alone teach "determining whether at least two of the plurality of microinstructions are required to issue in parallel." Consequently, independent claims 1, 10, and 12 and their dependent claims 3-5, 7-9, 11, 13-15, 18, 19, 21, 22 and 25 are allowable.

It is also noted that Paper No. 12 further states that "it is beneficial to require them to issue in parallel because they are both writing to the same register." This statement of purported benefit, or anything similar, is not found in Nakajima and is simply without basis in Nakajima. Indeed, as noted above, Nakajima purports to teach overcoming the problems of output dependency, not any benefits of writing to the same register. See col. 11, lines 45-47. Furthermore, as described with reference to FIGs. 12, only the instruction with the high WP writes to the register. See col. 12, lines 9-14.

Moreover, Paper No. 12 fails to provide sufficient motivation to combine all of the cited references. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) and MPEP § 2143.01. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) and MPEP 2141.01(b). Each rejection recited in Paper No. 12 requires at least a combination of four references, Col., Nakajima, Shang, and Song. Paper No. 12 fails to provide a motivation, from the references, for combining all four references together, let alone the additional references cited for the rejection of dependent claims 5, 9-11, 18, 21, 22, and 25.
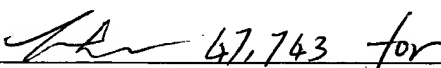
Additionally, the motivation provided is faulty. For example, Paper No. 12 states it would have been obvious to modify Col based on Nakajima "because the system would gain the advantage of increased execution speed when instructions can be issued in parallel, while still allowing instructions to not be issued in parallel when resource conflicts occur." Nakajima does not teach increased execution speed; rather, as shown in FIG. 19, the parallel issue in FIGs. 12 actually reduces execution speed because lock signals must be issued to overcome the problem of output dependency. It is also noted that a resource conflict does occur in FIGs. 12 – the output dependency. Consequently, Paper No. 12 fails to provide sufficient motivation for combining Col, Nakajima, Shang and Song. Therefore, the above rejections must be withdrawn and claims 1, 3-5, 7-15, 18, 19, 21, 22 and 25 allowed.

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CONCLUSION

In view of the above amendments and remarks, Applicants respectfully assert that the application is in condition for allowance. Prompt reexamination and allowance of claims 1-5, 7-16, 18-22 and 25-29 is respectfully requested. Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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Attachments

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